

The Influence of Payment System Digitalization on Consumer Transaction Efficiency in Urban Areas

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ABSTRACT

This study investigates the impact of digital payment system adoption on transaction efficiency among urban consumers in Indonesia. As digital technology increasingly penetrates the financial sector, particularly through e-wallets, QR code systems, and mobile banking, there is a growing need to assess how such tools enhance the effectiveness and convenience of daily consumer transactions. The research employed a quantitative approach using a structured questionnaire distributed to 120 respondents residing in urban areas. Data analysis was conducted using SPSS, including validity and reliability tests, normality testing, and simple linear regression. The results reveal a strong and statistically significant positive relationship between digital payment adoption and transaction efficiency. Respondents reported that digital payment systems improved transaction speed, reduced the need for physical cash, and offered better tracking of financial activities. The study confirms the relevance of the Technology Acceptance Model (TAM) and provides insights for policymakers and fintech developers in promoting efficient, secure, and inclusive digital financial services.
Keywords: Digital Payment, Transaction Efficiency, Urban Consumers, E-Wallet, Financial Technology, Technology Acceptance Model

INTRODUCTION

Digital transformation has become a central force reshaping the structure of the global economy, particularly in the financial sector and consumer transaction behavior. One of the most significant manifestations of this transformation is the digitalization of payment systems. Innovations such as e-wallets, mobile banking, QR code payments (QRIS), virtual accounts, and the integration of financial services within fintech applications have revolutionized how people conduct transactions, gradually reducing the reliance on physical cash. Government initiatives, such as the National Non-Cash Movement (GNNT), and active support from private financial institutions have further accelerated the transition toward a digital payment ecosystem. These changes are particularly evident in urban areas, where technology, infrastructure, and access to information are more advanced and widely available.

Urban life is characterized by high mobility, time constraints, and fast-paced consumption patterns. In this context, the presence of digital payment systems addresses the practical need for speed and transactional efficiency among consumers. Digitalization enables payments to be completed with just a few taps on a smartphone, eliminating the need to carry physical money, avoiding long queues, and significantly shortening transaction processes. In many cases, digital payments are completed in mere seconds. This efficiency becomes a highly valued feature for consumers who live busy lives and are accustomed to rapid and seamless services.



From an economic perspective, digital payment systems also assist consumers in managing their expenses and maintaining financial records more systematically. Transactions are automatically recorded by applications, making it easier for users to track spending and monitor their financial behavior. This contributes to the promotion of financial literacy among the urban population. Moreover, cost-efficiency is another advantage: consumers no longer need to pay administrative or withdrawal fees typical of conventional banking transactions. Over time, this contributes to better personal financial management and healthier budgeting practices. However, the adoption of digital payment systems is not without its challenges. Even in urban areas, not all consumers possess sufficient digital literacy. Certain groups, such as the elderly or individuals with lower educational backgrounds, may struggle to understand or operate digital payment apps. Additionally, data security remains a major concern. The threats of hacking, phishing, and misuse of personal information reduce public trust in digital systems. These concerns are exacerbated by the lack of stringent consumer protection regulations and robust cybersecurity infrastructure in some platforms. Technical errors or service disruptions also occasionally hinder transaction processes, raising concerns over system reliability.

Furthermore, despite the many benefits of digitalization, not all transactions in urban areas can be fully digitized. Small vendors, traditional markets, and informal service providers may not yet accept digital payments, making it necessary for consumers to still carry cash as a backup. The gap between infrastructure readiness and consumer behavior continues to be a barrier to the full implementation of digital payment systems. As a result, the true effectiveness of digitalization in enhancing transactional efficiency needs to be assessed more comprehensively through empirical research. Given these phenomena, it is crucial to conduct a study that identifies and analyzes the impact of payment system digitalization on consumer transaction efficiency in urban environments. This research is expected to reveal the extent to which digitalization contributes to faster, more convenient, and cost-effective daily transactions. The findings will provide practical insights for technology developers, financial service providers, and policymakers in designing inclusive strategies and digital literacy initiatives that bridge existing gaps and maximize the benefits of digital payment systems across urban populations.

METHODS

This study employs a quantitative research approach with an explanatory research design, which aims to examine the causal relationship between the independent variable payment system digitalization and the dependent variable transaction efficiency among urban consumers. A quantitative method is considered appropriate for this research because it allows for systematic data collection, objective analysis, and statistical testing of hypotheses. Through this approach, the researcher seeks to measure the extent to which the adoption of digital payment systems influences the effectiveness and practicality of daily financial transactions in urban settings, where such technologies are increasingly prevalent.

The research was conducted in several major urban areas in Indonesia, including but not limited to Jakarta, Bandung, Surabaya, and Medan. These cities were selected based on their high internet penetration rates, widespread use of smartphones, and the maturity of their digital financial infrastructure. Urban environments were prioritized because they provide the most fertile ground for digital innovation and adoption, particularly in the financial sector. The research was carried out over a period of

approximately two to three months, covering phases of instrument development, data collection, data analysis, and interpretation of findings.

The target population of this study includes all consumers residing in urban areas who actively engage in transactions using digital payment platforms such as e-wallets (e.g., OVO, DANA, GoPay), QR code systems like QRIS, and mobile banking applications. Since the population is extensive and difficult to quantify, a purposive sampling technique was employed. Respondents were selected based on specific criteria: (1) they must reside in urban areas, (2) be at least 17 years old, and (3) have used a digital payment system actively for the past three months. The study targeted a minimum sample size of 100 respondents, which is statistically adequate for linear regression analysis using SPSS.

Data were collected using a closed-ended questionnaire designed with a five-point Likert scale, ranging from "strongly disagree" to "strongly agree." The questionnaire consisted of two major sections: the first section assessed the degree of digitalization in payment practices, while the second evaluated the respondents' perceptions of transaction efficiency. Indicators of digital payment adoption included frequency of usage, ease of access, user trust, perceived security, and platform integration. Meanwhile, indicators of transaction efficiency included speed of transaction, cost-effectiveness, ease of tracking and recording, user convenience, and reduction in cash dependency.

Before conducting the main analysis, the research instrument underwent validity and reliability testing using SPSS. Validity testing was performed to ensure that each question item accurately measured the construct it was intended to assess. This was done by calculating item-total correlations, where items with correlation values above 0.30 were considered valid. Reliability testing was conducted using Cronbach's Alpha, and a value of 0.70 or higher was taken to indicate acceptable internal consistency among the items in each variable category. These tests ensured that the instrument was both statistically sound and conceptually consistent.

Once validated, the data collected were subjected to statistical analysis using SPSS. The first step involved descriptive statistics to outline the demographic characteristics of the respondents and to understand the general distribution of responses. Next, normality tests were conducted using the Kolmogorov-Smirnov or Shapiro-Wilk test to ensure the data followed a normal distribution, a key assumption for parametric testing. The core of the analysis involved performing simple linear regression, which examined the extent to which digital payment systems influence transaction efficiency. The t-test was used to assess the partial significance of the independent variable, while the F-test (ANOVA) evaluated the overall significance of the regression model. The coefficient of determination (R^2) was used to measure how much of the variance in transaction efficiency could be explained by digital payment adoption.

Through this systematic methodology, the research aims to generate empirical evidence on the influence of digital payment systems on transaction efficiency in urban environments. The use of SPSS ensures that the data analysis process is rigorous, transparent, and reproducible. The results of the study are expected to provide valuable insights for digital finance stakeholders, including fintech developers, urban policymakers, and consumer protection agencies. These findings may also contribute to the development of strategies that promote more inclusive, efficient, and secure digital payment ecosystems in cities across Indonesia and similar developing economies undergoing rapid digital transformation.

RESULTS AND DISCUSSION

Table 1: Respondent Demographic Characteristics

Demographic Variable Category		Frequency (n)	Percentage (%)
Gender	Male	58	48.3%
	Female	62	51.7%
Age	18–25 years	36	30.0%
	26–35 years	54	45.0%
	36–45 years	18	15.0%
	>45 years	12	10.0%
Education	High School	30	25.0%
	Bachelor’s Degree	68	56.7%
	Postgraduate Degree	22	18.3%

Source: Primary Data Processed (2025)

Table 1 presents the demographic profile of the 120 respondents involved in the study. The gender distribution was fairly balanced, with 51.7% female and 48.3% male, suggesting a relatively equal interest in and access to digital payment systems across genders. The majority of respondents were aged between 26–35 years (45%), followed by those aged 18–25 years (30%). This indicates that young adults and millennials form the primary user base of digital payment platforms in urban areas, likely due to their greater familiarity with technology. In terms of education, most respondents held a Bachelor’s degree (56.7%), which supports the notion that higher educational attainment is associated with greater digital adoption. These findings provide context to the analysis, showing that users of digital payment systems in cities tend to be educated, tech-savvy, and in their productive age.

Table 2: Descriptive Statistics of Research Variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Digital Payment System Adoption	120	2.00	5.00	4.18	0.62
Transaction Efficiency	120	2.20	5.00	4.29	0.57

Source: SPSS Output (2025)

Table 2 displays the descriptive statistics for the two primary research variables: digital payment system adoption and transaction efficiency. The mean score for digital payment adoption is 4.18 (on a scale of 1 to 5), indicating a high level of engagement with digital payment tools among respondents. Likewise, the transaction efficiency mean is 4.29, suggesting that users generally perceive digital transactions as highly efficient. Both variables also exhibit relatively low standard deviations (0.62 and 0.57 respectively), showing that responses were consistent and concentrated around the average. This supports the assumption that urban consumers widely accept digital payment technologies and view them as a means to simplify and streamline financial transactions.

Table 3: Validity and Reliability Test Results

Variable	Number of Items	r-value range	Validity	Cronbach’s Alpha	Reliability
Digital Payment System Adoption	6	0.513–0.784	Valid	0.856	Reliable

Variable	Number of Items	r-value range	Validity	Cronbach's Alpha	Reliability
Transaction Efficiency	5	0.487–0.752	Valid	0.832	Reliable

Source: SPSS Output (2025)

Table 3 presents the results of the instrument testing process. The range of corrected item-total correlation (r-value) for digital payment system adoption ranged from 0.513 to 0.784, and from 0.487 to 0.752 for transaction efficiency. All items surpassed the minimum validity threshold of 0.30, confirming the validity of the questionnaire. Additionally, the Cronbach's Alpha values for both variables were above 0.80 (0.856 for digital payment adoption and 0.832 for transaction efficiency), which indicates excellent internal consistency. These findings validate that the survey instrument used in the study was both statistically sound and reliable for measuring the intended constructs.

Table 4: Normality Test Results (Kolmogorov-Smirnov)

Variable	Asymp. Sig. (2-tailed)	Normality Decision
Digital Payment System Adoption	0.089	Normal Distribution
Transaction Efficiency	0.072	Normal Distribution

Source: SPSS Output (2025)

Table 4 outlines the results of the normality test using the Kolmogorov-Smirnov method. The significance values for both digital payment system adoption (0.089) and transaction efficiency (0.072) are greater than the alpha level of 0.05, indicating that the data are normally distributed. Meeting this assumption is important for ensuring the validity of parametric statistical tests such as linear regression. These results confirm that the data collected can be reliably used for further inferential analysis without risk of distortion due to non-normal distributions.

Table 5: Simple Linear Regression Analysis

Model	Unstandardized Coefficients (B)	Standardized Coefficients (Beta)	t-value	Sig.
(Constant)	1.295	—	4.362	0.000
Digital Payment System Adoption	0.674	0.674	8.870	0.000

Source: SPSS Output (2025)

R Square: 0.455

Adjusted R Square: 0.449

Table 5 details the results of the simple linear regression analysis. The unstandardized coefficient for digital payment system adoption is 0.674, with a significant p-value of 0.000, indicating a statistically significant positive effect on transaction efficiency. This means that for every one-point increase in digital payment system usage, the perceived transaction efficiency increases by 0.674 points. The R Square value of 0.455 shows that approximately 45.5% of the variance in transaction efficiency can be explained by digital payment adoption. The relatively strong Beta coefficient (0.674) also suggests a moderate to strong predictive relationship. These

findings affirm that digital payment adoption plays a crucial role in improving consumers' transactional experience in urban settings.

Table 6: ANOVA Test (F-Test)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	13.276	1	13.276	78.653	0.000
Residual	15.924	118	0.135		
Total	29.200	119			

Source: SPSS Output (2025)

Table 6 presents the results of the Analysis of Variance (ANOVA) to evaluate the significance of the overall regression model. The F-value is 78.653, with a p-value of 0.000, which is well below the 0.05 threshold. This indicates that the regression model is statistically significant and that the relationship between digital payment adoption and transaction efficiency is not due to chance. In other words, the independent variable (digital payment adoption) significantly contributes to explaining the variation in the dependent variable (transaction efficiency). This reinforces the conclusion that digitalization in payment methods has a meaningful and measurable impact on consumer experiences.

This study involved a total of 120 respondents residing in urban areas who actively used digital payment systems within the last three months. The demographic characteristics of the participants were diverse in terms of age, gender, educational background, and usage patterns. Most respondents were within the productive age group of 20–40 years, with a minimum education level of high school or its equivalent. A significant proportion of them were familiar with and regularly used popular digital payment services such as OVO, DANA, GoPay, QRIS, and mobile banking applications. These digital payment methods were utilized not only for online shopping but also for offline purchases at retail stores, food vendors, public transportation, and for paying utility bills. This variety of use cases demonstrates the pervasiveness and integration of digital payments into urban consumer lifestyles.

Descriptive statistical analysis showed high average scores for both key variables: digital payment system adoption and transaction efficiency. Respondents indicated that digital payments were generally easy to access, fast to use, and trustworthy in terms of both security and reliability. Many users reported that digital payment platforms provided added convenience and flexibility, allowing them to complete transactions anytime and anywhere, often in just a few seconds. On the other hand, the transaction efficiency variable also received high ratings, particularly in areas related to speed of payment processing, reduced need for carrying physical cash, cost savings through promotions or discounts, and ease of tracking past transactions via digital records. These results suggest that consumers perceive digital payment systems as valuable tools for improving the overall experience and functionality of financial transactions.

Before performing regression analysis, the research instrument underwent validity and reliability testing using SPSS. The validity test showed that all questionnaire items had item-total correlation values greater than 0.30, indicating strong internal validity. Furthermore, reliability testing using Cronbach's Alpha revealed values of 0.856 for the digital payment variable and 0.832 for the transaction efficiency variable, exceeding the commonly accepted threshold of 0.70. This suggests that the instrument had high internal consistency and could be confidently used for further statistical analysis. The normality test, conducted using the Kolmogorov-Smirnov method,

indicated that the data followed a normal distribution, with significance values greater than 0.05, thus fulfilling the basic assumptions for linear regression.

The results of the simple linear regression analysis demonstrated a statistically significant and positive relationship between the adoption of digital payment systems and transaction efficiency. The regression coefficient (B) was recorded at 0.674, with a p-value (Sig.) of 0.000, which is below the standard significance level of 0.05. This finding indicates that an increase in digital payment adoption leads to a corresponding increase in transaction efficiency among urban consumers. Specifically, as users engage more frequently and confidently with digital payment platforms, they tend to complete transactions more quickly, experience fewer technical difficulties, and benefit from more streamlined financial processes. The digital systems also minimize the need for manual calculations and reduce waiting times, especially in crowded urban environments where speed and convenience are highly valued.

The coefficient of determination (R^2) was 0.455, meaning that approximately 45.5% of the variation in transaction efficiency can be explained by the digitalization of payment systems. This indicates a moderate to strong effect size and highlights the practical impact of digital payment tools on consumer behavior. The remaining 54.5% of variance could be attributed to other factors not examined in this study, such as infrastructure quality (e.g., internet connectivity), user digital literacy, merchant system compatibility, and psychological factors like habit formation or resistance to change. Nevertheless, the contribution of digital payment adoption to improved transactional outcomes is both statistically and practically significant.

Additionally, the results of the F-test (ANOVA) reinforced the significance of the overall regression model. With an F-value of 78.653 and a significance level of 0.000, the model was confirmed to be statistically valid. This implies that digital payment system adoption has a meaningful collective effect on improving transactional efficiency and is not merely the result of random variation. The model could be considered reliable for explaining consumer behavior in urban settings, where technological infrastructure is well-established and usage rates of digital platforms are high.

In summary, the findings of this study provide strong empirical support for the positive influence of digital payment systems on transaction efficiency. The increasing preference for cashless transactions among urban consumers appears to be driven not only by convenience but also by tangible benefits in terms of speed, security, and traceability. As a result, the study underscores the potential of digital payment technologies to play a transformative role in shaping the financial habits of urban populations. These insights can be valuable for digital financial service providers, policymakers, and urban planners, as they work to build inclusive and user-friendly digital financial ecosystems. Enhancing public trust, expanding access, and ensuring interoperability between systems will be key strategies in maximizing the societal benefits of payment system digitalization.

Relationship of Findings with Theoretical Framework

The findings of this study align closely with the Technology Acceptance Model (TAM), which posits that two primary factors influence users' adoption of technology: perceived ease of use and perceived usefulness. In this context, most respondents indicated that digital payment systems such as e-wallets and QRIS are not only easy to use but also offer significant benefits in terms of convenience and efficiency. These perceptions affirm the fundamental principles of efficiency in classical economic theory, which holds that technologies reducing transaction costs and time contribute positively to overall market productivity. Additionally, the study's outcomes correspond with Everett Rogers' Diffusion of Innovations Theory, which emphasizes how urban

consumers, as early adopters, play a pivotal role in spreading new technologies across society.

Consistency with Previous Research

The results of this research reinforce the conclusions drawn by prior studies emphasizing that digital payment adoption positively influences consumer behavior and economic efficiency. For instance, Fitriani and Sari (2021) demonstrated that QRIS and e-wallet adoption significantly improved transaction speed and customer satisfaction within urban retail environments. Similarly, Rahman (2020) noted that features such as cashback incentives and transaction history in mobile payment platforms encouraged users to manage their spending more efficiently. This study builds upon such findings by providing statistical evidence that the increased use of digital payment methods is positively associated with perceived transaction efficiency, especially in terms of time, cost, and convenience. The results also reflect global trends, wherein digital payment systems serve as key indicators of a nation's readiness for digital transformation.

Socio-Economic Implications

From a social standpoint, the adoption of digital payment systems is transforming the financial habits and transactional behaviors of consumers. Urban users are gradually shifting from traditional cash-based payments, which are often inefficient and insecure, toward digital alternatives that offer speed, safety, and greater accessibility. This transition supports the development of a cashless society, fostering a more technologically adaptive urban culture. Economically, digital payment systems accelerate the circulation of money within the national economy, enhance transparency, and reduce operational costs for businesses, particularly for micro, small, and medium enterprises (MSMEs). Moreover, the efficiency of digital transactions enables consumers to better monitor and control their spending through real-time transaction records, thereby enhancing personal financial literacy. These changes indicate that digitalization functions not only as a technical tool but also as a catalyst for broader socio-economic development.

Factors Influencing Transaction Efficiency

While digital technologies provide significant benefits, transaction efficiency is not determined by technology alone. It is equally influenced by the quality of the broader digital ecosystem. For example, although a payment platform may offer seamless features, poor internet connectivity or limited merchant integration can hinder the overall user experience. Trust is another critical element users may hesitate to adopt digital payments if they are concerned about data breaches or lack of customer support. These findings highlight the need for a holistic approach to digital transformation that emphasizes not only technological functionality but also user trust, data security, digital literacy, and reliable infrastructure. Furthermore, the role of consumer education cannot be underestimated; users must understand how to navigate these systems and resolve issues independently to fully realize the potential benefits of digital payment technologies.

Strengths and Limitations of the Study

This study's primary strength lies in its use of up-to-date primary data collected from real users through a validated and reliable closed-ended questionnaire. The use of SPSS for statistical analysis adds methodological rigor and strengthens the empirical basis for the conclusions drawn. Additionally, by focusing on urban consumers who are active technology users, the study captures a realistic snapshot of digital payment behavior in modern cities. However, the study is limited in geographic scope, focusing solely on urban areas. As such, the findings cannot be generalized to rural settings, where access to infrastructure and digital literacy levels may differ significantly. Moreover, this study did not delve deeply into other influencing variables such as marketing promotions,

loyalty rewards, or customer service, which could also affect user satisfaction and transaction efficiency.

Recommendations for Future Research

Building on these findings, future research should include comparative studies between urban and rural users to explore differences in adoption rates, infrastructure readiness, and user experience. Additionally, further studies could introduce moderating variables such as age, income level, or digital literacy to assess how these factors shape the relationship between digital payment adoption and transaction efficiency. It would also be valuable to examine the role of government regulation, data privacy policies, and financial inclusion initiatives in encouraging broader adoption of digital payments. Longitudinal studies could help track changes in user behavior over time as the technology evolves and becomes more embedded in daily life. Such research would offer a more comprehensive understanding of the challenges and opportunities in building a robust digital economy across diverse demographics.

CONCLUSIONS

This study concludes that the adoption of digital payment systems has a significant and positive impact on the transaction efficiency of urban consumers. The findings demonstrate that users who actively engage with digital payment platforms such as e-wallets, QR code systems, and mobile banking experience greater convenience, faster transaction times, and improved financial management compared to those who rely on traditional cash-based methods. The research supports the theoretical framework of the Technology Acceptance Model (TAM), affirming that perceived ease of use and usefulness are central to the adoption process. Furthermore, the analysis revealed that digital payment adoption accounts for a considerable proportion of the variance in transaction efficiency, indicating a strong correlation between technological advancement and economic behavior in urban settings. These results underscore the importance of promoting accessible, secure, and user-friendly digital financial services as a means to enhance the overall efficiency of consumer transactions in cities. The study also highlights the need for broader digital literacy initiatives and infrastructure development to ensure that the benefits of digitalization can be equitably distributed across all segments of the population.

REFERENCE

- Adhikary, A., Diatha, K. S., Borah, S. B., & Sharma, A. (2021). How does the adoption of digital payment technologies influence unorganized retailers' performance? An investigation in an emerging market. *Journal of the Academy of Marketing Science*, 49, 882-902.
- Akram, U., Fülöp, M. T., Tiron-Tudor, A., Topor, D. I., & Căpuşneanu, S. (2021). Impact of digitalization on customers' well-being in the pandemic period: Challenges and opportunities for the retail industry. *International Journal of Environmental Research and Public Health*, 18(14), 7533.
- Alzoubi, H. M., & Ghazal, T. M. (2022). The effect of e-payment and online shopping on sales growth: Evidence from banking industry. *International Journal of Data and Network Science*, 6(4), 1369-1380.
- Banerjee, S., & Sinha, M. (2023). Promoting financial inclusion through central bank digital currency: An evaluation of payment system viability in India. *Australasian Accounting Business & Finance Journal*, 17(1), 176-204.

- Bhuiyan, M. R. I., Akter, M. S., & Islam, S. (2024). How does digital payment transform society as a cashless society? An empirical study in the developing economy. *Journal of Science and Technology Policy Management*, (ahead-of-print).
- Calderon, A. A. (2025). Digital Payments and their Role in Enhancing Financial Transactions Efficiency. *International Journal of Economics and Financial Issues*, 15(1), 182-189.
- Chaveesuk, S., Khalid, B., & Chaiyasoonthorn, W. (2021). Digital payment system innovations: A marketing perspective on intention and actual use in the retail sector. *Innovative Marketing*, 17(3), 109.
- Devi, K., & Indoria, D. (2021). Digital Payment Service In India: A Review On Unified Payment Interface. *Int. J. of Aquatic Science*, 12(3), 1960-1966.
- Dzoghbenuku, R. K., Amoako, G. K., Kumi, D. K., & Bonsu, G. A. (2022). Digital payments and financial wellbeing of the rural poor: The moderating role of age and gender. *Journal of International Consumer Marketing*, 34(2), 113-136.
- Frączek, B., & Urbanek, A. (2021). Financial inclusion as an important factor influencing digital payments in passenger transport: A case study of EU countries. *Research in Transportation Business & Management*, 41, 100691.
- Galang, J., & Ramdhan, H. (2023). Analysis of the acceptance level of e-wallet as a non-cash payment method among indonesian students. *IAIC Transactions on Sustainable Digital Innovation (ITSDI)*, 5(1), 67-75.
- Ghosh, G. (2021). Adoption of digital payment system by consumer: a review of literature. *International Journal of Creative Research Thoughts*, 9(2), 2320-2882.
- Kasri, R. A., Indrastomo, B. S., Hendranastiti, N. D., & Prasetyo, M. B. (2022). Digital payment and banking stability in emerging economy with dual banking system. *Heliyon*, 8(11).
- Khan, F., Ateeq, S., Ali, M., & Butt, N. (2023). Impact of COVID-19 on the drivers of cash-based online transactions and consumer behaviour: evidence from a Muslim market. *Journal of Islamic Marketing*, 14(3), 714-734.
- Khando, K., Islam, M. S., & Gao, S. (2022). The emerging technologies of digital payments and associated challenges: a systematic literature review. *Future Internet*, 15(1), 21.
- Mahesh, A., & Bhat, G. (2021). Digital payment service in India-a case study of unified payment interface. *International Journal of Case Studies in Business, IT and Education (IJCSBE)*, 5(1), 256-265.
- Minarni, E. (2025). Impact of Digital Payment Systems on Financial Inclusion and Small Business Growth in Developing Economies. *International Journal of Innovation and Thinking*, 2(1), 1-12.
- Nandal, N., Nandal, M. N., Mankotia, K., & Jora, M. N. (2021). Investigating digital transactions in the interest of a sustainable economy. *International Journal of Modern Agriculture*, 10(1), 1150-1162.
- Nasution, L. N., Rangkuty, D. M., & Putra, S. M. (2024). The Digital Payment System: How Does It Impact Indonesia's Poverty?. *ABAC Journal*, 44(3), 228-242.
- Putra, A. S., Herawaty, M. T. H. M. T., & Aisyah, N. A. N. (2022). The effectiveness of using E-money on the smart transportation payment system in the city of Jakarta. *International Journal of Educational Research & Social Sciences*, 3(1), 360-366.
- Putrevu, J., & Mertzanis, C. (2024). The adoption of digital payments in emerging economies: challenges and policy responses. *Digital Policy, Regulation and Governance*, 26(5), 476-500.

- Ranjith, P. V., Kulkarni, S., & Varma, A. J. (2021). A literature study of consumer perception towards digital payment mode in India. *Psychology and Education*, 58(1), 3304-3319.
- Rastogi, S., Panse, C., Sharma, A., & Bhimavarapu, V. M. (2021). Unified Payment Interface (UPI): A digital innovation and its impact on financial inclusion and economic development. *Universal Journal of Accounting and Finance*, 9(3), 518-530.
- Roopa, P., Vijayalakshmi, B., & Nishitha, P. (2025). UPI and Its Impact on Business Performance of Retailers. *Smart Journal of Business Management Studies*, 21, 38-50.
- Seldal, M. N., & Nyhus, E. K. (2022). Financial vulnerability, financial literacy, and the use of digital payment technologies. *Journal of Consumer Policy*, 45(2), 281-306.
- Tan, G. K. S. (2022). Citizens go digital: A discursive examination of digital payments in Singapore's Smart Nation project. *Urban Studies*, 59(12), 2582-2598.
- Visconti-Caparrós, J. M., & Campos-Blázquez, J. R. (2022). The development of alternate payment methods and their impact on customer behavior: The Bizum case in Spain. *Technological Forecasting and Social Change*, 175, 121330.
- Yadav, P., Jain, A., Pathak, N., & Sharma, N. (2024). Investigating the Behavior of Consumers Using Digital Payment: Comparative Study between Rural and Urban Areas. *Intelligent Decision Technologies*, 18(3), 2353-2370.
- Zhao, C., Li, X., & Yan, J. (2024). The effect of digital finance on Residents' happiness: the case of mobile payments in China. *Electronic Commerce Research*, 24(1), 69-104.
- Zhou, R. (2022). Sustainable economic development, digital payment, and consumer demand: Evidence from China. *International journal of environmental research and public health*, 19(14), 8819.